

WHAT IS CLAIMED:

1. An isolated nucleic acid molecule encoding a short
5 integuments1 protein.
2. An isolated nucleic acid molecule according to claim 1,
wherein the nucleic acid molecule encodes a protein having an amino acid
sequence of SEQ. ID. No. 2.
3. An isolated nucleic acid molecule according to claim 1,
wherein the nucleic acid has a nucleotide sequence of SEQ. ID. No. 1.
4. An antisense nucleic acid molecule encoding a nucleic acid
15 sequence which is complementary to the DNA according to claim 1.
5. An isolated nucleic acid molecule according to claim 1,
wherein the nucleic acid has a nucleotide sequence that is at least 55% similar to
the nucleotide sequence of SEQ. ID. No. 1 by basic BLAST using default
20 parameters analysis.
6. An isolated nucleic acid molecule according to claim 1,
wherein the nucleic acid hybridizes to the nucleotide sequence of SEQ. ID. No. 1
under stringent conditions characterized by a hybridization buffer comprising
25 0.9M sodium citrate buffer at a temperature of 45°C.
7. An expression vector comprising a transcriptional and
translational regulatory DNA operably linked to a DNA molecule according to
claim 1.
8. An expression vector according to claim 7, wherein the
DNA molecule is in proper sense orientation and correct reading frame.

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9. A host cell transduced with nucleic acid according to claim

~~8-10.~~ ⁷ A host cell according to claim 9, wherein the cell is selected

5 from a group consisting of a bacterial cell, a virus, a yeast cell, and a plant cell.

11. A plant cell according to claim 10, wherein the nucleic acid molecule either 1) encodes an amino acid having SEQ. ID. No. 2, 2) has a nucleotide sequence of SEQ. ID. No. 1, 3) is at least 55% similar to the nucleotide sequence of SEQ. ID. No. 1 by basic BLAST using default parameters analysis, or 4) hybridizes to the nucleotide sequence of SEQ. ID. No. 1 under stringent conditions characterized by a hybridization buffer comprising 0.9M sodium citrate buffer at a temperature at a temperature of 45°C.

15 ~~9-12.~~ A transgenic plant transduced with the nucleic acid according to claim 1.

13. A transgenic plant according to claim 12, wherein the nucleic acid molecule either 1) encodes an amino acid having SEQ. ID. No. 2, 2) has a nucleotide sequence of SEQ. ID. No. 1, 3) is at least 55% similar to the nucleotide sequence of SEQ. ID. No. 1 by basic BLAST using default parameters analysis, or 4) hybridizes to the nucleotide sequence of SEQ. ID. No. 1 under stringent conditions characterized by a hybridization buffer comprising 0.9M sodium citrate buffer at a temperature of 45°C.

25 ~~10-14.~~ A transgenic plant seed transduced with the nucleic acid according to claim 1.

15. A transgenic plant seed according to claim 14, wherein the nucleic acid molecule either 1) encodes an amino acid having SEQ. ID. No. 2, 2) has a nucleotide sequence of SEQ. ID. No. 1, 3) is at least 55% similar to the nucleotide sequence of SEQ. ID. No. 1 by basic BLAST using default parameters analysis, or 4) hybridizes to the nucleotide sequence of SEQ. ID. No. 1 under

stringent conditions characterized by a hybridization buffer comprising 0.9M sodium citrate buffer at a temperature of 45°C.

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16. An isolated short integuments1 protein.

17. An isolated protein according to claim 16, wherein the protein has an amino acid sequence of SEQ. ID. No. 2.

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18. A method of regulating flowering in plants comprising:
transducing a plant with a DNA molecule according to
claim 1 under conditions effective to regulate flowering in the plant.

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19. A method according to claim 18, wherein the nucleic acid molecule either 1) encodes an amino acid having SEQ. ID. No. 2, 2) has a nucleotide sequence of SEQ. ID. No. 1, 3) is at least 55% similar to the nucleotide sequence of SEQ. ID. No. 1 by basic BLAST using default parameters analysis, or 4) hybridizes to the nucleotide sequence of SEQ. ID. No. 1 under stringent conditions characterized by a hybridization buffer comprising 0.9M sodium citrate buffer at a temperature of 45°C.

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20. A method of increasing fertility in plants comprising:
transducing a plant with a DNA molecule according to
claim 1 under conditions effective to increase fertility in the plant.

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21. A method according to claim 20, wherein the nucleic acid molecule either 1) encodes an amino acid having SEQ. ID. No. 2, 2) has a nucleotide sequence of SEQ. ID. No. 1, 3) is at least 55% similar to the nucleotide sequence of SEQ. ID. No. 1 by basic BLAST using default parameters analysis, or 4) hybridizes to the nucleotide sequence of SEQ. ID. No. 1 under stringent conditions characterized by a hybridization buffer comprising 0.9M sodium citrate buffer at a temperature of 45°C.

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22. A method of increasing fecundity of plants comprising:

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transducing a plant with a DNA molecule according to
claim 1 under conditions effective to increase fecundity of the plant.

23. A method according to claim 22, wherein the nucleic acid
5 molecule either 1) encodes an amino acid having SEQ. ID. No. 2, 2) has a
nucleotide sequence of SEQ. ID. No. 1, 3) is at least 55% similar to the nucleotide
sequence of SEQ. ID. No. 1 by basic BLAST using default parameters analysis, or
4) hybridizes to the nucleotide sequence of SEQ. ID. No. 1 under stringent
conditions characterized by a hybridization buffer comprising 0.9M sodium citrate
10 buffer at a temperature of 45°C.

24. A method of decreasing fertility in plants comprising:
transducing a plant with a DNA molecule according to
claim 1 mutated to cause disruption of the DNA molecule under conditions
15 effective to decrease fertility.

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25. A method according to claim 24 wherein a plant is
transduced with a DNA molecule which encodes either 1) an antisense nucleic
acid complementary to the nucleic acid molecule that encodes an amino acid
20 having SEQ. ID. No. 2, 2) an antisense nucleic acid complementary to the
nucleotide sequence of SEQ. ID. No. 1, 3) an antisense nucleic acid
complementary to a nucleic acid molecule that is at least 55% similar to the
nucleotide sequence of SEQ. ID. No. 1 by basic BLAST using default parameters
analysis, or 4) hybridizes to the nucleotide sequence of SEQ. ID. No. 1 under
25 stringent conditions characterized by a hybridization buffer comprising 0.9M
sodium citrate buffer at a temperature of 45°C.